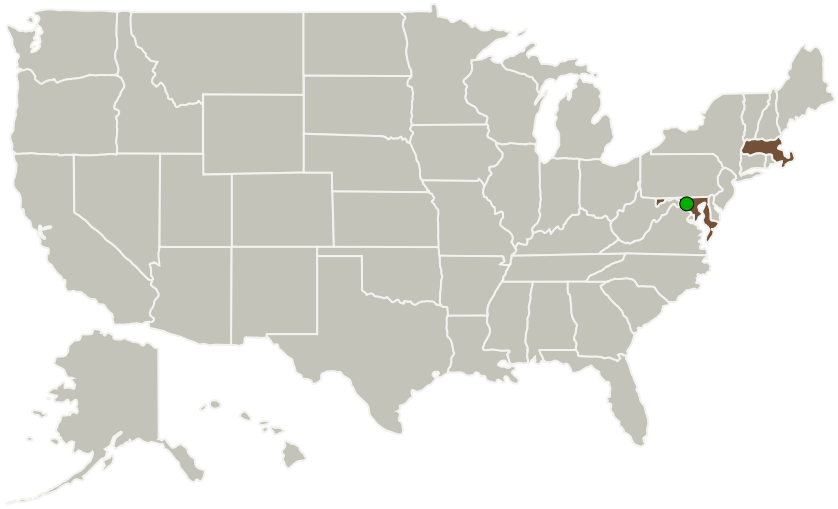
Mobile Passive Optical Imager for Remote Gas Detection, Phase I

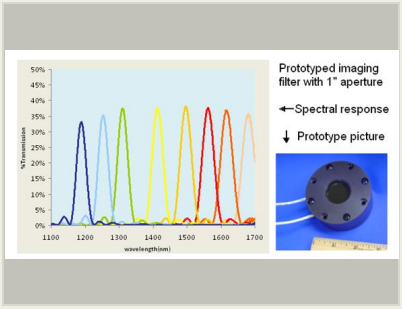
Completed Technology Project (2013 - 2013)

Project Introduction

Tunable filters based on electro-optic effect have shown great potential in detecting gas concentration through obtaining its absorption spectrum. In filter-based technologies, the x-y 2D imaging is usually taken at once, while the wavelength dimension is performed by tunable filters that are mounted in front of a monochrome IR camera. Several types of tunable filters are currently available, including mechanically tuned Fabry-Perot etalon (FP filter), liquid-crystal Lyot-Ohman filters and acousto-optic filters. However, these EO tuning technologies have some shortages, such as slow tuning speed, bulky design, limited working band and small aperture. Boston Applied Technologies, Inc. (BATi) proposes a unique remote sensing system which is based on a tunable filter with under millisecond tuning time for high speed detection of gas concentration. The core part, tunable filter, of the proposed system is made of patented OptoCeramic® material. The system features high speed, wide spectral range from visible to MWIR, low cost, light weight, big aperture, and robust.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Boston Applied Technologies, Inc.	Lead Organization	Industry Minority-Owned Business	Woburn, Massachusetts
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Transitions

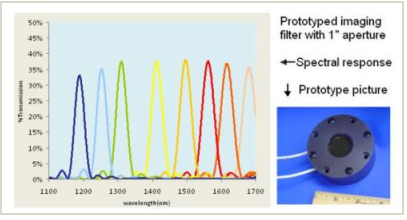
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138315)*

Images



Project Image
Mobile Passive Optical Imager for Remote Gas Detection
(https://techport.nasa.gov/image/127166)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Boston Applied Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

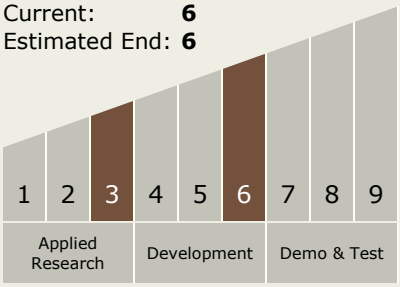
Carlos Torrez

Principal Investigator:

Qizhi Zhang

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System